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Filed : **12/5/2003**

AMENDMENTS TO THE CLAIMS

1.-6. **(Canceled)**

7. **(Previously Presented)** The system of Claim 9, wherein the conduit comprises a multi-lumen catheter.

8. **(Canceled)**

9. **(Previously Presented)** A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy;

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit, wherein the conduit further comprises:

an inflow port;

a first lumen fluidly coupled with the inflow port such that blood can be directed from the inflow port into the first lumen;

a second lumen fluidly coupled to the pump such that blood can be pumped from the pump through the second lumen;

an outflow port fluidly coupled with the second lumen such that blood can be directed from the second lumen through the outflow port;

a first cannula positioned between the pump and the first lumen; and

a second cannula positioned between the second lumen and the pump

wherein the conduit is configured such that the inflow port can be positioned at a first location within the patient's vasculature and the outflow port can be positioned at a second location within the vasculature.

10. **(Currently Amended)** ~~The system of Claim 12,~~ A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory, and

wherein the pump is configured to be implanted within the patient.

11. **(Canceled)**

12. **(Canceled)**

13. **(Currently Amended)** ~~The system of Claim 12, further comprising:~~A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy;

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

a motor operatively coupled to the pump; and

a programmable controller electronically coupled to the motor and configured to control the speed of the motor and the output of the pump,

wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory.

14. **(Canceled)**

15. **(Previously Presented)** A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the conduit is configured to direct blood from a first peripheral vessel to a second vessel.

16. **(Previously Presented)** The system of Claim 15, wherein the first peripheral vessel is a femoral artery and the second vessel is the aorta.

17. **(Previously Presented)** A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein a first location is within a left femoral artery and a second location is in a descending aorta proximate an arterial branch.

18. **(Previously Presented)** The system of Claim 17, wherein the second location is proximate a subclavian artery.

19. **(Previously Presented)** The system of Claim 17, wherein the second location is proximate a mesenteric artery.

20. **(Previously Presented)** The system of Claim 17, wherein the conduit comprises a multi-lumen catheter.

21. **(Previously Presented)** The system of Claim 17, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

22. **(Previously Presented)** The system of Claim 15, wherein the conduit comprises a multi-lumen catheter.

23. **(Previously Presented)** The system of Claim 15, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

24. **(Currently Amended)** ~~The system of Claim 14,~~ A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the pump comprises a rotary pump, and

wherein the system is configured to be applied to the patient through a single cannulation site.

25. **(Currently Amended)** ~~The system of Claim 14, further comprising:~~ A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy;

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit,

a motor operatively coupled to the pump; and

a programmable controller electronically coupled to the motor and configured to control the speed of the motor and the output of the pump,

wherein the pump comprises a rotary pump.

26. **(Canceled)**

27. **(Canceled)**

28. **(Currently Amended)** ~~The system of Claim 12,~~ A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory, and

wherein the pump comprises a rotary pump.

29. **(Currently Amended)** ~~The system of Claim 12,~~ A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory, and

wherein the conduit is configured to direct blood from a first peripheral vessel to a second vessel.

30. **(Previously Presented)** The system of Claim 29, wherein the first peripheral vessel is a femoral artery and the second vessel is the aorta.

31. **(Currently Amended)** ~~The system of Claim 12,~~A system for supplementing blood circulation in a patient comprising:

a pump configured to pump blood through the patient at subcardiac flow rates, said pump having an average flow rate that, during normal operation thereof, is substantially below that of the patient's heart when healthy; and

a conduit fluidly coupled to the pump and configured to direct blood between two locations within the patient's vasculature wherein the blood may travel in reverse directions within the conduit;

wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory, and wherein the conduit comprises a multi-lumen catheter.

32. **(Currently Amended)** The system of Claim [[12]]31, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

33. **(New)** The system of Claim 31, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in the aorta.

34. **(New)** The system of Claim 31, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in an axillary artery.

35. **(New)** The system of Claim 31, wherein the system is configured to be applied to the patient through a single cannulation site.

36. **(New)** The system of Claim 31, wherein the pump comprises a rotary pump.

37. **(New)** The system of Claim 31, wherein the pump is configured to be implanted within the patient.

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38. (New) The system of Claim 29, wherein the conduit comprises a multi-lumen catheter.

39. (New) The system of Claim 29, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

40. (New) The system of Claim 29, wherein the system is configured to be applied to the patient through a single cannulation site.

41 (New) The system of Claim 29, wherein the pump comprises a rotary pump.

42. (New) The system of Claim 29, wherein the pump is configured to be implanted within the patient.

43. (New) The system of Claim 31, wherein the first peripheral vessel is a femoral artery and the second vessel is an axillary artery.

44. (New) The system of Claim 28, wherein the conduit comprises a multi-lumen catheter.

45. (New) The system of Claim 28, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in the aorta.

46. (New) The system of Claim 28, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in an axillary artery.

47. (New) The system of Claim 28, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

48. (New) The system of Claim 28, wherein the system is configured to be applied to the patient through a single cannulation site.

49. (New) The system of Claim 28, wherein the pump is configured to be implanted within the patient.

50. (New) The system of Claim 24, wherein the conduit comprises a multi-lumen catheter.

51. (New) The system of Claim 24, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in the aorta.

52. (New) The system of Claim 24, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in an axillary artery.

53. (New) The system of Claim 24, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

54. (New) The system of Claim 24, wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory.

55. (New) The system of Claim 24, wherein the pump is configured to be implanted within the patient.

56. (New) The system of Claim 15, wherein the system is configured to be applied to the patient through a single cannulation site.

57. (New) The system of Claim 15, wherein the pump comprises a rotary pump.

58. (New) The system of Claim 15, wherein the conduit is comprised of a material that is sufficiently flexible so as not to prevent the patient from being ambulatory.

59. (New) The system of Claim 15, wherein the pump is configured to be implanted within the patient.

60. (New) The system of Claim 15, wherein the first peripheral vessel is a femoral artery and the second vessel is an axillary artery.

61. (New) The system of Claim 10, wherein the conduit comprises a multi-lumen catheter.

62. **(New)** The system of Claim 10, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in the aorta.

63. **(New)** The system of Claim 10, wherein a first location of the patient's vasculature is in a femoral artery and a second location is in an axillary artery.

64. **(New)** The system of Claim 10, wherein the pump is sized and configured to discharge blood at volumetric flow rates between about 0.1 liters/min and about 3.0 liters/min.

65. **(New)** The system of Claim 10, wherein the system is configured to be applied to the patient through a single cannulation site.

66. **(New)** The system of Claim 10, wherein the pump comprises a rotary pump.